## ENVIRONMENTAL CHEMISTS

있는데 얼마나 하는 얼마를 하는데 하는데 되었다.			일 시간 발생 보다 이 경우는 이 사람이 되었다. 그 아이 아들 때 보고 있다. 전
Client ID: M115804		Client:	Alaskan Copper Works
Date Received: 03/01/07		Project:	PO# M115804, F&BI 703015
Date Extracted: 03/02/07		Lab ID:	703015-01 x100
Date Analyzed: 03/05/07		Data File:	703015-01 x100.072
Matrix: Sludge		Instrument	: ICPMS1
Units: mg/kg (p)	pm)	Operator:	HR
	Na alliyatiy	V - State - S	The still of the Manual

당보하다면 가지 가게 되었다.		Lower	pper
Internal Standard:	% Recovery:	Limit: L	imit:
Germanium	123	60	125
Indium	118	60	125
Bismuth	110	60	125

	맛이 보존하다 하다.
ger war ege haar te	Concentration
Analyte:	mg/kg (ppm)
Chromium	4,900
Nickel	2,700
Copper	510
Zinc	2,700
Arsenic	<100
Silver	<100
Cadmium	<100
Lead	140

## ENVIRONMENTAL CHEMISTS

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	PO# M115804, F&BI 703015
Date Extracted:	03/02/07	Lab ID:	I7-78 mb
Date Analyzed:	03/05/07	Data File:	I7-78 mb.019
Matrix:	Sludge	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	HR
Alamaki sukiba	ditta etilika dikeneridik	Lower	Upper

		Lower	Upper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	94	60	125
Indium	94	60	125
Bismuth	98	60	125
2019년 1월 1일 중요한 1917년 1월 1일			

Analyte:	Concentration mg/kg (ppm)
	5 5 4.
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<2
Arsenic	<1
Silver	<1
Cadmium	<1
Lead	<1
	The first that the property in

#### **ENVIRONMENTAL CHEMISTS**

M115804	Client: Alaskan Copper Works
ived: 03/01/07	Project: PO# M115804, F&BI 703015
acted: 03/05/07	Lab ID: 703015-01 x1000
yzed: 03/05/07	Data File: 703015-01 x1000.077
Water	Instrument: ICPMS1
ug/L (ppb)	Operator: HR
	ived: 03/01/07 acted: 03/05/07 yzed: 03/05/07

한다. 1111이는 기사가 고생활동을 가다면 하고 있으로 있는데	Lower Upper	
Internal Standard: % Recovery:	Limit: Limit:	
Germanium 123	60 125	
Indium 103	60   125	
Bismuth 101	60 $125$	

Analyte:	Concentration ug/L (ppb)
Chromium	6,020,000
Nickel	3,640,000
Copper	134,000 J
Zinc	3,120,000 J
Arsenic	55,100
Silver	<1,000
Cadmium	<1,000
Lead	112,000

J - The LCS associated with the analyte is out of control limits. The reported value should be considered an estimate.

#### **ENVIRONMENTAL CHEMISTS**

#### Analysis For Total Metals By EPA Method 200.8

Client ID: M115804 Client: Alaskan Copper Works Date Received: Project: PO# M115804, F&BI 703015 03/01/07 Date Extracted: 03/05/07 Lab ID: 703015-01 x100 703015-01 x100.050 03/05/07 Data File: Date Analyzed: Matrix: Water Instrument: ICPMS1 Units: ug/L (ppb) Operator: HR

시작하고 있었는데 어느라 보고 하다가 잘 하는데 있다니다.		Lower	Upper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	189 vo	60	125
Indium	100	60	125
Bismuth	188 vo	60	125

Concentration Analyte: ug/L (ppb) Chromium S ve Nickel 2,090,000 ve Copper 73,000 J 1,670,000 ve Zinc Arsenic 55,300 Silver 124 Cadmium 961 68,100 J Lead

- vo The value reported fell outside the control limits established for this analyte.
- ve The value reported exceeded the calibration range established for the analyte. The reported concentration is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported value should be considered an estimate.
- S The analyte exceeded the instrument quantitation range. The sample was diluted.

## **ENVIRONMENTAL CHEMISTS**

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	PO# M115804, F&BI 703015
Date Extracted:	03/05/07	Lab ID:	17-79 mb
Date Analyzed:	03/05/07	Data File:	I7-79 mb.024
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	HR STEELEN TO

전투다 바라내다 극악하다 하는 하는 (급속) [ )		Lower	${f Upper}$
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	111	60	125
Indium	117	60	125
Bismuth	121	60	125

	Concentration
Analyte:	ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<2
Arsenic	<1
Silver	<1
Cadmium	<1
Lead	<1

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

Date Extracted: 03/02/07 Date Analyzed: 03/02/07

## RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR SPECIFIC GRAVITY @ 15.56 °C

Sample ID Laboratory ID Specific Gravity

M115804 703015-01

1.24

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

Date Extracted: 02/28/07 Date Analyzed: 03/01/07

# RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR PERCENT ACID

Percent Acid

Sample ID Laboratory ID

 $M115804 \\ 702307-01$  8.6

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SLUDGE SAMPLES FOR TOTAL METALS BY EPA METHOD 200.8

Laboratory Code: 703010-01 (Duplicate)

				Relative	나는 날 가를 받아	747 A
	with the state of	Sample	Duplicate	Percent	Acceptan	ce
Analyte	Reporting Unit	s Result	Result	Difference	Criteria	
Chromium	mg/kg (ppm)	6.67	6.58	1	0-20	1.1
Nickel	mg/kg (ppm)	13.7	13.4	2	0-20	
Copper	mg/kg (ppm)	5.47	5.33	3	0-20	
Zinc	mg/kg (ppm)	9.64	8.86	8	0-20	
Arsenic	mg/kg (ppm)	<1	<1	nm	0-20	
Silver	mg/kg (ppm)	<1	<1	nm	0-20	
Cadmium	mg/kg (ppm)	<1	<1	nm	0-20	71.5%
Lead	mg/kg (ppm)	1.63	1.33	20	0-20	

Laboratory Code: 703010-01 (Matrix Spike)

					Percent			
			Spike	Sample	Recover	y	Acceptanc	e
G,	Analyte	Reporting Units	Level	Result	MS		Criteria	
2.1	Chromium	mg/kg (ppm)	50	6.67	96		50-150	
	Nickel	mg/kg (ppm)	25	13.7	87 b		50-150	
	Copper	mg/kg (ppm)	50	5.47	94		50-150	
	Zinc	mg/kg (ppm)	50	9.64	103		50-150	
	Arsenic	mg/kg (ppm)	10	<1	100		50-150	
	Silver	mg/kg (ppm)	10	<1	115		50-150	Torigon a
	Cadmium	mg/kg (ppm)	10	<1	106	4.545	50-150	
	Lead	mg/kg (ppm)	20	1.63	101		50-150	

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SLUDGE SAMPLES FOR TOTAL METALS BY EPA METHOD 200.8

Laboratory Code: Laboratory Control Sample

			Percent	aligna abilita at
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Chromium	mg/kg (ppm)	50	94	70-130
Nickel	mg/kg (ppm)	25	94	70-130
Copper	mg/kg (ppm)	50	97	70-130
Zinc	mg/kg (ppm)	50	101	70-130
Arsenic	mg/kg (ppm)	10	99	70-130
Silver	mg/kg (ppm)	10	110	70-130
Cadmium	mg/kg (ppm)	10	101	70-130
Lead	mg/kg (ppm)	20	99	70-130

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

#### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS BY EPA METHOD 200.8

Laboratory Code: 702289-01 (Duplicate)

김하철의 기본의 인	지수 교실에 걸음하는 경우를 보다			Relative		
		Sample	Duplicate	Percent	Acceptanc	e
Analyte	Reporting Units	Result	Result	Difference	Criteria	1 .
Chromium	ug/L (ppb)	2.41	2.43	1	0-20	
Nickel	ug/L (ppb)	6.33	6.36	0	0-20	
Copper	ug/L (ppb)	10.4	11.4	9	0-20	
Zinc	ug/L (ppb)	16.0	18.4	14	0-20	
Arsenic	ug/L (ppb)	9.69	9.83	1	0-20	
Silver	ug/L (ppb)	<1	<1	nm	0-20	Sale
Cadmium	ug/L (ppb)	<1	<1	nm	0-20	
Lead	ug/L (ppb)	4.17	4.49	7	0-20	

Laboratory Code: 702289-01 (Matrix Spike)

					Percent		se se file
			Spike	Sample	Recovery	Acceptance	ce
	Analyte	Reporting Units	Level	Result	MS	Criteria	
100	Chromium	ug/L (ppb)	20	2.41	97	50-150	
9 8 6 69	Nickel	ug/L (ppb)	20	6.33	98 b	50-150	
0	Copper	ug/L (ppb)	20	10.4	100 b	50-150	No. 3
	Zinc	ug/L (ppb)	50	16.0	<b>104</b> b	50-150	
	Arsenic	ug/L (ppb)	10	9.69	110 b	50-150	
	Silver	ug/L (ppb)	5	<1	115	50-150	
	Cadmium	ug/L (ppb)	5	<1	107	50-150	
	Lead	ug/L (ppb)	10	4.17	114 b	50-150	

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS BY EPA METHOD 200.8

Laboratory Code: Laboratory Control Sample

				Percent	
Dis-		(그는 다시 얼마를 하는 것이다. 아니다.	Spike	Recovery	Acceptance
	Analyte	Reporting Units	Level	LCS	Criteria
7	Chromium	mg/kg (ppm)	20	130	70-130
	Nickel	mg/kg (ppm)	20	127	70-130
	Copper	mg/kg (ppm)	20	131 vo	70-130
	Zinc	mg/kg (ppm)	50	133 vo	70-130
	Arsenic	mg/kg (ppm)	10	129	70-130
	Silver	mg/kg (ppm)	5	147 vo	70-130
	Cadmium	mg/kg (ppm)	5	131 vo	70-130
	Lead	mg/kg (ppm)	10	130	70-130

vo - The value reported fell outside the control limits established for this analyte.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AQUEOUS SAMPLES FOR SPECIFIC GRAVITY

@ 15.56 °C

Laboratory Code:	703015-01 (D	uplicate)		
	Sample	Duplicate	Relative Percent	Acceptance
Analyte	Result	Result	Difference	Criteria
Specific Gravity	1.24	1.24	0	0-2

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/08/07 Date Received: 03/01/07

Project: 8600 Acid Tank, PO# M115804, F&BI 703015

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES FOR PERCENT ACID

Laboratory Code: 703015-01 (Duplicate)

Analyte	Sample Analyte Result		Relative Percent Difference	Acceptance Criteria	1,5
Percent Acid	8.6	8.6	0	0-20	100

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

March 8, 2007

## DUPLICATE

#### INVOICE #07ACU0308-1

Accounts Payable Alaskan Copper Works 628 South Hanford Seattle, WA 98134

RE: Project 8600 Acid Tank, PO# M115804, F&BI 703015 - Results of testing requested by Gerry Thompson for material submitted on March 1, 2007.

2 samples analyzed for Total Chromium, Copper, Nickel and Zinc Arsenic, Cadmium, Lead, and Silver by Method 200.8 @ \$160 per sample		\$ 320.00
1 sample analyzed for Specific Gravity @ 15.56°C by ASTM Method D-1298 @ \$25 per sample		25.00
1 sample analyzed for Percent Acid Content @ \$50 per sample		50.00
Rush Charges (7 day) 30% of \$235.00		70.50
Amount Due	į	\$ 465.50

federal tax id #(b) (6)

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Address 628 S. F	trontant	50		8600 Act tak M115804							Rush charges authorized by:									
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Sample ID	Lab ID	Date	Time	Sample '		# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	% of HWOS	SPEC. GRANNY	a CUNTO	As OD, Ph. AG		И	otes	
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703015

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

March 8, 2007

Gerry Thompson, Project Manager Alaskan Copper Works 628 South Hanford Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on March 1, 2007 from the 8600 Acid Tank, PO# M115804, F&BI 703015 project. There are 13 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures